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BEFORE THE ARIZONA CORPORATION COMMISSION

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Arizona Corporation Commission
DOCKETED
APR -8 2011
DOCKETED BY

LYNN A. WHEELER,

Complainant,

vs.

ARIZONA PUBLIC SERVICE COMPANY,

Respondent

DOCKET NO. E-01345A-10-0201

SURREBUTTAL

AND ASSOCIATED ATTACHMENTS

Lynn A. Wheeler ("Complainant") provides the following document. **This is my sworn surrebuttal testimony and associated exhibits**. I am the property manager and part owner of America's Choice Inn and Suites located in Gila Bend, Arizona (the "Motel"). I filed a formal complaint against the Arizona Public Service Company (APS) on March 30, 2010.

Luis Abril-Herrera was the first person to provide direct testimony on behalf of Arizona Public Service (APS) Company on February 4, 2011. This testimony should be stricken from the record. Mr. Abril-Herrera is not a Registered Professional Engineer in accordance with the Arizona State Board of Technical Registration. In accordance with the Arizona Administrative Code, Title 14, Chapter 3, Paragraph 106k, "Motions shall conform insofar as practicable with the Rules of Civil Procedure for the Superior Court of the State of Arizona." In all probability, Mr. Abril-Herrera's testimony would not be allowed in Superior Court.

Further, Mr. Abril-Herrera is an employee of APS. He has been employed by this Company for 12 years. His testimony is likely provided under duress of maintaining his position within the Company. Mr. Abril-Herrera is likely to say or provide testimony that is false, misleading or

incomplete because it has been directed by his supervisor.

If Mr. Abril-Herrera's testimony is allowed, it should be discounted and perceived as biased, with no more professional authority than any other person offering an opinion on this matter.

On Page 2, Lines 8-12, Mr. Abril-Herrera testifies: "The Company continuously monitors the distribution feeder backbone (from which services are tapped) to ensure the following: (1) that there is sufficient capacity on the distribution system; (2) the feeder or equipment are not overloaded and are operating within established guidelines; and (3) that voltage at the substation buss is within the established limits."

On Page 4, Lines 11-15, Mr. Abril-Herrera continues: "...the routine studies performed by APS have not shown that GB22 Feeder deviated from the established operating guideline. In fact, APS has not identified any overloads, low voltage situations or capacity limitations on GB22 Feeder that required system upgrades, i.e., new feeder, new feeder tie, new substation, upgrade to feeder, since it was constructed."

There are two significant problems with this testimony. First, the testing is accomplished at the substation. The low-voltage problem at the motel is 8.5 miles away from the substation. Second, the testing completed by APS is inadequate or unreliable because it did not detect the low-voltage problem found by an APS District Serviceman at a secret/covert entity/customer. The low-voltage condition was apparently significantly below standards because the District Serviceman took immediate and dramatic action. The Serviceman had a recording voltmeter installed and he initiated a job order to install the voltage regulator bank. (See Wheeler 4.16 Response)

Although APS may complete testing at the Gila Bend Substation, it is obvious this testing is incapable of testing for low-voltage conditions at the Service Entrance Site (SES) of customers who actually use the power being supplied.

Angela J. Allison, Senior Consumer Advocate for APS was the second person to provide testimony on behalf of APS. The veracity of her information should be questioned for two reasons. First, she is an employee of APS. She is likely providing biased testimony under duress of maintaining her position within the Company. Second, the information provided in the February 4, 2011 testimony conflicts with other information previously provided.

The first conflicting information is on Page 2, Lines 17-20. Ms. Allison states: "APS returned to the hotel property on June 12, 2006 to specifically test the voltage being delivered to the Hotel. There was no evidence of inadequate voltage, but APS chose to place a capacitor bank on-line. This could have raised the voltage level and could have improved the power factor of the feeder."

The conflicting information comes from an E-mail message Ms. Allison sent to ACC Investigator John LaPorta, dated June 14, 2006. In the E-mail, Ms. Allison states, "I researched Mr. Wheeler's complaint and found that an APS serviceman visited this property on 5/22/06 in response to a report of low voltage. To resolve the problem, a capacitor was replaced. This corrects the power factor of a circuit and the voltage improved immediately. Since this seemed to resolve the problem, the serviceman did not feel it was necessary to install the recording meter."

The explanation given on June 14, 2006 by Ms. Allison to ACC Investigator John LaPorta, was significantly altered compared to her direct testimony given five years later on February 4, 2011. First, the date was changed from May 22, 2006 to June 12, 2006. Second, the serviceman's action changed from "To resolve the problem a capacitor was replaced." to "...APS chose to place a capacitor back on-line." Third, the admission of the low voltage was changed from, "...the voltage improved immediately. Since this seemed to resolve the problem..." to "There was no evidence of inadequate voltage..."

The second conflicting information comes from Page 4, Lines 5-15 of Ms. Allison's testimony. She states: "On June 18, 2007, Complainant filed a third informal complaint again alleging low voltages. The next day, APS had a conference call with Mr. Prem Bahl of the Commission Staff.

APS informed Mr. Bahl that a serviceman had been to the Hotel on June 18, 2007, and found the voltage at 118.7, 116.8, and 117.4 phase to ground and 302.6*, 205.7, and 200.9 phase to phase--below the designed level of 208/120V, but still well within Commission limits. The serviceman nevertheless increased the voltage to 208/120 by raising the voltage in the capacitor bank. Mr. Bahl agreed that the voltage being provided was within the limits prescribed by the Commission both before and after the June 18, 2007 adjustment, but asked if APS could raise it another two (2) volts. APS resisted this further increase due to concerns about the impact on other equipment at the Hotel."

(* Note: The number should probably be 202.6, not 302.6. 302.6 volts would be 94.6 volts higher than the desired 208 volt level. This would have burned out everything that was on this phase of the power. The 302.6 volt figure was questioned. (See "Wheeler 4.26 Response" for details.) However, APS maintained this was an accurate figure.)

The conflicting information comes from the E-mail message written by Prem Bahl on June 19, 2007. A copy of the E-mail message can be found at Attachment 22 to Exhibit 1 of the Complainant's initial direct testimony. The E-mail is from ACC's engineer Prem Bahl to Jennie Vega with courtesy copies to John LaPorta, Del Smith and Angela Allison. The body of the message reads: "This follows up my conversation today with Angela Wilson and Ray Passarelli in regards to a complaint of low voltage by Lynn Wheeler of Gila Bend. Ray explained the steps APS had taken to improve voltage at the customer's premises, which is a hotel. Supply voltage is 120/208V. Ray stated that APS changed the transformer and its settings to improve the voltage in the fall of 2006 to 207 V phase -to-phase. (The underlined passage was added for emphasis.) The 73 air conditioners installed at the hotel are designed to operate at 208/230V. Even if the voltage is within permissible limits of +/- 5% variation, it is understood that these air conditioners do not operate efficiently at voltages less than 208V. The customer desires to have electric supply at a higher than 208 voltage. I suggested to Angela that APS may offer to the customer higher voltage supply option, providing him with a cost estimate, for which he would be responsible, and meantime maintain the voltage at the premises at 208 V or slightly higher. I know APS has the tools and the ability to deal with this customer and his problem."

The significant difference is Angela Allison testified Prem Bahl, "...asked if APS could raise it another two (2) volts." In the actual E-mail Prem Bahl advised, "...and meantime maintain the voltage at the premises at 208V or slightly higher. I know APS has the tools and the ability to deal with this customer and his problem."

Donald R. Lamontagne was the third person to provide direct testimony on behalf of Arizona Public Service (APS) Company on February 4, 2011. This testimony should be stricken from the record. Mr. Lamontagne is not a Registered Professional Engineer in accordance with the Arizona State Board of Technical Registration. In accordance with the Arizona Administrative Code, Title 14, Chapter 3, Paragraph 106k, "Motions shall conform insofar as practicable with the Rules of Civil Procedure for the Superior Court of the State of Arizona." In all probability, Mr. Lamontagne's testimony would not be allowed in Superior Court.

Further, Mr. Lamontagne is an employee of APS. He has been employed by this Company for 10 years. His testimony is likely provided under duress of maintaining his position within the Company. Mr. Lamontagne is likely to say or provide testimony that is false, misleading or incomplete because it has been directed by his supervisor.

If Mr. Lamontagne's testimony is allowed, it should be discounted and perceived as biased, with no more professional authority than any other person offering an opinion on this matter.

When asked the purpose of his testimony, Mr. Lamontagne admits it is to "...provide my opinion as to the likely cause of such failure." (Page 2, Line 2) On Page 2, Lines 9-12 of Mr. Lamontagne's testimony he states: "My analysis indicates that replacement air conditioning units were likely not like-for-like replacements for the original air-conditioning units in that they were likely not rated for a minimum voltage of 187 volts."

The reason for Mr. Lamontagne's speculation is based upon the history of the equipment failure at the Hotel. On Page 2, Lines 24-26 and Page 3, Lines 1-4, he states: "Mr. Wheeler stated that for about 11 years the original air-conditioning units worked properly. After replacing the air-

conditioning units, Mr. Wheeler reported that the replacement air-conditioning units were failing prematurely. The replacement air-conditioning units are likely not a like-for-like replacement for the original Sears Air-conditioning units. If the replacement units were like-for-like, one would expect to see similar service life from the replacement units."

Mr. Lamontagne opined the replacement air-conditioning units are the standard of the industry. On Page 5, Lines 11-16 he continues: "In researching some Amana air-conditioning unit's installation manuals and specification sheets, these documents indicate that the air-conditioning units are rated "208/230V" with a minimum voltage rating of 197 volts. Amana Product Specifications is attached hereto as Attachment DRL-4. Other manufacturers had units also rated at "208/230V" but stated a minimum voltage of 187 volts." Mr. Lamontagne suggested "other manufacturers" had units with a minimum voltage of 187 volts, but does not include documentation concerning these units. He refers the reader to the "Answer to Formal Complaint" presented by APS on June 14, 2010. That document refers the reader to two web sites:

The first web site is:

http://www.trane.com/webcache/un/packaged%20terminal%20air%20conditioner%20and%20heat%20pumps%20(ptac)/service/ptac-svx01d-en_09012008.pdf

The second web site is:

http://www.docs.hvacpartners.com/idc/groups/public/documents/techlit/52c,p-2so.pdf

Portions of these documents may be found at Attachment 1 and 2 respectively.

When reviewing these two documents you find out the units are much larger than the units installed at the motel. On Page 8 of the Trane Manual, Figure 4 shows the minimum wall opening dimensions as "16 ¼ X 42 ½ inches." On Page 5, Table 3 of the Carrier Document, it shows the "Standard depth wall sleeve 16 ¼ X 42 X 13 ¾ inches." These are not like-for-like units. The PTAC units used at the Hotel are 26 inches wide. A copy of the specification sheet for the current Amana PTAC Units can be found at Attachment 3.

Additional information is available by contacting the companies. I called 800-894-6449; the number listed for Carrier Service/Technical Assistance and spoke with Stephanie. She advised Carrier stopped building this unit in 2009. They do not build comparable units. She could not

provide technical information about the units.

I called Trane at 602-258-9600 and spoke with Steve in PTAC Product Support. He advised Trane stopped manufacturing this unit in 2009 and they do not offer a comparable model. I inquired about the note on Page 13, Table 4 which states, "minimum voltage on 230/208 volt models is 187 volts; maximum is 253 volts." He advised voltages down to 187 volts would be "considered a low dip. The unit is not designed to operate continuously at this level." I asked if Trane had ever manufactured a PTAC unit that included the 187 to 253 volt range in a 24 to 26 inch cabinet. Steve responded no. The increased heat generated by low voltage operation could not be dissipated in the smaller cabinet size.

On Page 3, Lines 14-15 of his testimony, Mr. Lamontagne states: "Mr. Wheeler claims that the replacement air -conditioning units require voltage in a range of 208 volts to 230 volts" and provides a foot note "Wheeler direct testimony, 4:10-11" Mr. Lamontagne has taken the information out of context. The entire statement includes lines 8 to 13 which states, "After additional units failed, one of the maintenance technicians (Joe Huffine) recommended checking the power supply. He advised the PTAC units are designed to operate in the power range of 208 to 230 volts. Operation outside of that power range, especially below 208 volts, will damage the motors because of overheating."

On Page 5, Lines 8-12, Mr. Lamontagne states: "If Mr. Wheeler's air-conditioning units are indeed "208-230V" rated equipment, rather than "208/230V" equipment, then Mr. Wheeler purchased non-standard air-conditioning equipment. However, it is much more likely that Mr. Wheeler purchased standard air-conditioning units rated "208/230V", and Mr. Wheeler is misinterpreting the nameplate designation." The footnote refers to "Wheeler direct testimony, 2:17-20." Mr. Lamontagne is once again trying to mislead the reader. The provided reference reads, "The motor/compressors are name plated 208/230. This is the standard configuration for mid-sized, through-the-wall air conditioners that are manufactured by companies such as Amana, Carrier, Fedders, Fredrich, Frigidaire, GE, Sears and others."

Mr. Lamontagne addresses the voltage drop inside the Hotel as the primary reasons the

compressors on the PTAC units must be rated with a minimum voltage of 187 volts. On Page 6, Lines 22-24 and Page 7, Line 1, he states: "The Hotel has a ten volt drop through 250 feet of #10 AWG wire between the utility service and the terminal voltage of its farthest air-conditioning unit (20 amps to and from a 250 foot run with a resistance of).9989 ohms/1000 feet = 9.989 volts)." My response is, there are only three possible PTAC units in the Hotel that are 250 feet away from the service entrance. What about the other 70 PTAC units in the facility? Some of these units are only 15 to 50 feet from the service entrance. Using his theory, why do the units located 15 to 50 feet from the service entrance suffer the same overheating and premature failure?

In another area of his testimony, Mr. Lamontagne returns to the subject of 200 volt motors. On Page 4, Lines 6-10 he states: "In response to APS's suggestion that the replacement units purchased should have had 200 volt motors, it should be noted that Mr. Wheeler claimed that "through the wall PTAC units are not manufactured with 200 volt motors. However, the Air-Conditioning & Refrigeration Institute Standard 110 does show 200 volts as an approved alternate to 208 volts." My response is, it doesn't matter if the Air Conditioning & Refrigeration Institute Standard 110 does show 200 volts as an approved alternate to 208 volts. The 208 volt power supply is the standard of the industry. Companies who manufacture PTAC units build them with the standard power supply of 208/230, 115, and 265 volts. Continuing to assert that 200 volts is an option, demonstrates Mr. Lamontagne is not in touch with reality and doing business in the real world.

On a related subject, Mr. Lamontagne returns to the subject of NEMA Standards. On Page 4, Lines 13-18 he states: "Motors are manufactured pursuant to the National Electrical Manufacturers Association ("NEMA") Standards Publication No. MG-1, Motors and Generators. NEMA Standards Publication No. MG-1, 1998, Section II, Small (Fractional) and Medium (Integral) Machines, Part 10, Ratings-AC Small and Medium Motors, paragraph 10.30b.1 identifies that standard voltages for single-phase, 60 HA motors are 115, 200 and 230 volts."

Once again, I will try to bring Mr. Lamontagne back from his theoretical pontifications. The NEMA Standards may identify standard voltages as 115, 200 and 230 volts, but that's not what

is available in the real world. In the real world when you are trying to purchase a PTAC unit which is 24-26 inches wide, the standard of the industry is 208/230, 115 and 265 volts.

To conclude, Mr. Lamontagne summarizes his testimony on Page 8, Lines 10-14 with the following statement: "My analysis indicates that the replacement air-conditioning units were likely not like-for-like replacements for the original air-conditioning units in that they are likely not rated for a minimum voltage of 187 volts. This minimum rating is required to take into account the ten (10) volt drop caused by the wiring in the Hotel between the APS delivery point and the farthest room at the Hotel."

One thing that we can agree on is the replacement PTAC units were not rated for a minimum voltage of 187 volts. The reason is, there is no such PTAC unit being manufactured. After a year of research, Mr. Lamontagne has come up with two PTAC units that show an ability to operate at a minimum voltage of 187 volts. Neither of the units are <u>like-for-like</u> because they were both 42 inches wide. This is 16 inches wider than the 26-inch wide Amana units presently being used. It is impossible to install a 42-inch wide PTAC unit without doing major renovation which would include removing a load bearing stud and adding a 42 inch header to support the weight plus additional trimmers at each end of the header. And in addition, neither of these units has been manufactured since 2009.

<u>Gregory Teslevich</u> was the fourth person to provide direct testimony on behalf of Arizona Public Service (APS) Company on February 4, 2011. This testimony should be stricken from the record. Mr. Teslevich is not a Registered Professional Engineer in accordance with the Arizona State Board of Technical Registration. In accordance with the Arizona Administrative Code, Title 14, Chapter 3, Paragraph 106k, "Motions shall conform insofar as practicable with the Rules of Civil Procedure for the Superior Court of the State of Arizona." In all probability, Mr. Teslevich's testimony would not be allowed in Superior Court.

Further, Mr. Teslevich is an employee of APS. His testimony is likely provided under duress of maintaining his position within the Company. Mr. Teslevich is likely to say or provide

testimony that is false, misleading or incomplete because it has been directed by his supervisor.

If Mr. Teslevich's testimony is allowed, it should be discounted and perceived as biased, with no more professional authority than any other person offering an opinion on this matter.

Mr. Teslevich spends eight pages of testimony to show the voltage recorded by APS from June 21-27, 2006 shows the values were within ANSI standards. However, he does nothing to show the voltage of the power prior to the testing.

As previously stated, prior to this testing, a capacitor bank had been replaced on 5/22/2006 according to the E-mail message sent to ACC Investigator John LaPorta dated 6/14/2006. (See Atch 23 to Exhibit 1 of the Complainant's Testimony) However, five years later, Angela Allison has changed the story and offers testimony stating the capacitor wasn't replaced on 5/22/2006, but rather "APS chose to place a capacitor bank on line" on 6/12/2006. Other discrepancies of Allison's testimony of this incident were addressed on Pages 3 and 4 of this document. Regardless, the capacitor was replaced or reset, probably both, prior to the first testing that was accomplished on 6/13/2006 to 6/16/2006.

Further, APS changed the transformer and its settings to improve the voltage in the fall of 2006 to 207 V phase -to-phase. This information was provided by APS employee Ray Passarelli to ACC Engineer/Investigator Prem Bahl on his E-mail message dated June 19, 2007.

It is interesting that Mr. Teslevich chooses to focus on the test conducted on 6/21/2006 to 6/27/2006 and ignores the other two tests which were conducted on 6/13/2006 to 6/16/2006 and 8/09/2007 to 8/13/2007. It is also interesting Mr. Teslevich chooses to ignore the Voltage Minute Histogram that is part of the test results. On Page 5, Lines 4-7 of his testimony, Mr. Teslevich states, "The Power Quality Recorder produces a Voltage Cycle Report, a Voltage Minute Histogram Report, and a Voltage Out of Limits Report." The Voltage Minute Histogram is the report that breaks out exactly what voltage is being supplied for what length of time. As can be seen in Attachment 4, the three phases of the power supplied are significantly out of balance. Phase 1 is below the desired 208 volt level 18% of the time. Phase 2 is below the

desired level 56% of the time and Phase 3 is above the desired 208 volt level 100% of the time. In an E-mail message to ACC Investigator John LaPorta dated 6/30/2006, Angela Allison advises, "I spoke with Mr. Wheeler on 6/22/06 and he questioned why two separate APS serviceman were on his property installing two different recording volt meters (RVM's). I explained that, apparently, it was found that the previous RVM on the transformer (the 6/13/2006 to 6/16/2006 test) was installed incorrectly. So, APS was out today to install another RVM on the transformer serving the hotel and another RVM on the customer's equipment (meter panel)."

The Voltage Minute Histogram Report for 6/21/2006 to 6/27/2006, which Mr. Teslevich chose to exclude from his report, can be seen at Attachment 5. The report is 7 days long verses 4 days in the first report dated 6/13/2006 to 6/16/2006. It shows a very similar pattern to the first Histogram that was produced. Phase 1 is above the desired 208 volt level 100% of the time. Phase 2 is below the desired 208 volt level 25% of the time. Phase 3 is below the desired 208 volt level 71% of the time. Although Ms. Allison claims "the previous voltmeter was installed incorrectly" on the first test, the results from the two volt meter tests are very consistent with each other.

Another inconsistency Mr. Teslevich brings to light is the absence of the Voltage Minute Histogram Report for the test on 8/09/2007 to 8/13/2007. Although Mr. Teslevich testifies "the Power Quality Recorder produces a ... Voltage Minute Histogram Report...," APS has refused to produce this report for the test that was conducted on 8/09/2007 to 8/13/2007.

Kenneth R. Wolf was the fifth person to provide direct testimony. Mr. Wolf is an employee of APS and has been employed by this Company for 27 years. His testimony is likely provided under duress of maintaining his position within the Company. Mr. Wolf is likely to say or provide testimony that is false, misleading or incomplete because it has been directed by his supervisor. Any testimony provided by Mr. Wolf should be discounted and perceived as biased.

On Page 2, Lines 21-25 of his testimony, Mr. Wolf states: "Mr. Wheeler stated that the air-conditioning units have nameplate ratings of 208-230 volts, and this rating is incompatible with

the 208/120 volts Range A voltage that APS provides. APS increased the voltage to the Hotel after Mr. Wheeler executed (on August 29, 2007) the Request for a Voltage Variance Agreement."

The truth of the matter is, APS prepared the document titled, "Request for Voltage Variance." Item C of this document states, "The existing heat pump window units at the Property have nameplate ratings of 208-230 volts, which is not compatible with the 120/208 volts "Range A" voltage provided by APS. Consequently, the heat pumps have not been working properly." Although the Voltage Variance document was not accurate, APS refused to increase the power voltage until the agreement was signed. In order to obtain a level of power sufficient to prevent the continued overheating and destruction of the 73 PTAC units at the Hotel, I signed the letter under duress.

During the Discovery Process, it has come to light a similar low-voltage situation has occurred on GB Feeder #22. APS has provided sketchy, partial information on a General Service Customer but has refused to identify who this person/entity is to allow a proper deposition and complete understanding of significance of the low-voltage situation. What APS has been willing to admit is "The low voltage was discovered by APS District Serviceman while testing voltage after changing out a meter for a malfunctioning display / dead meter. After discovering the low voltage, the customer was contacted by APS and a recording volt meter was installed. Also, a job order was initiated to install the voltage regulator" which was installed on 3/07/2008. (See Wheeler 4.16 Response.)

The comparison between what happened with this covert entity/customer and what has happened at America's Choice Inn and Suites is remarkable. We complained numerous times about a low-voltage situation. We requested several times to have a recording volt meter installed for testing. We went to mediation to obtain support from the Arizona Corporation Commission. We were told the problem is the equipment at the motel. We were told we should have purchased PTAC units with 200 volt compressors. We were told we should have purchased buck boost transformers. We were told we should rewire the facility with 240 volt service. We were forced to sign a request for voltage variance. We were forced to hire an independent electrician to be

present for turning up the taps on the transformers. Compare that scenario to what has happened with the covert entity/customer. The low voltage condition was found by an APS District Serviceman. "After discovering the low voltage, the customer was contacted by APS and a recording volt meter was installed. Also, a job order was initiated to install the voltage regulator." And oh, by the way, the voltage regulator bank cost $43,616.

Mechanical Engineer Michael Tobin was contacted to provide an explanation of what has caused the premature failure of the PTAC units installed at the Hotel. Mr. Tobin is Registered Professional Engineer licensed to practice in Arizona, Colorado, California and Texas. A copy of his professional opinion can be found at Attachment 6. Tobin specifically addresses the 200 volt motor recommendation made APS employees Chris Weathers, Kenneth Wolf and Donald Lamontagne. He states, "Equipment designed to operate with this voltage is not commercially available from any manufacturer known to me."

Mr. Tobin goes on to present his professional opinion on the cause of the problem. On the second page he states: "Arizona Public Service has provided evidence from a recording volt meter in 2006, that the service voltage feeder #22 that serves the motel had dropped to as low as 200 volts. This was after a number of changes including adding capacitors and changing tap settings. APS has provided no record as evidence of what the service voltage was prior to making any adjustments. In the time between 1995 and 2000, thirty five customers were added to this feeder and I would suggest the additional load caused the voltage to sag and this produced an under voltage situation that has resulted in the premature failure of the motel's PTAC units. No evidence can be provided that demonstrates the voltage was sufficient prior to altering the distribution system."

Electrical Engineer Michael Burgett has also provided his professional opinion on the cause of this problem. Mr. Burgett is a Registered Professional Engineer licensed to practice in Arizona. On Page 3 of his opinion, Mr. Burgett states:

"No matter how much smoke APS puts up to screen the truth, the obvious fact is, for eleven years the Gila Bend Feeder #22 was lightly loaded and supplied the correct voltage to America's

Choice Inn and Suites. As the feeder became loaded during the next few years, APS did not maintain the feeder and voltage and only up-graded the feeder when customers complained and allowed the system to supply sub standard power to its customers. This blatant disregard of their customers has caused America's Choice Inn and Suites to spend an inordinate amount of money to maintain their facility.

It is our opinion that America's Choice Inn and Suites has been improperly serviced by the utility and that the emphasis the utility placed on the units is an attempt to throw the blame on the customer rather than to admit to their negligence in maintaining a proper system. Further, the Arizona Corporation Commission should, in our opinion, do what they were created to do by protecting the customer from this type of manipulation by utilities and semi-monopolies." A complete copy of Mr. Burgett's opinion may be found at Exhibit 1 of my direct testimony.

As a way of relief, we request the Arizona Corporation Commission direct the Arizona Public Service Company to pay $73,010.00 for the replacement and installation of 73 through-the wall PTAC heating and air conditioning units at the America's Choice Inn and Suites at Gila Bend, Arizona. This is a very reasonable request. We are not seeking payment for loss of business. We are not seeking repayment of the numerous service call charges. We are not seeking payment for the significant loss of manpower spent trying to remedy what should have been a very easy problem to resolve.

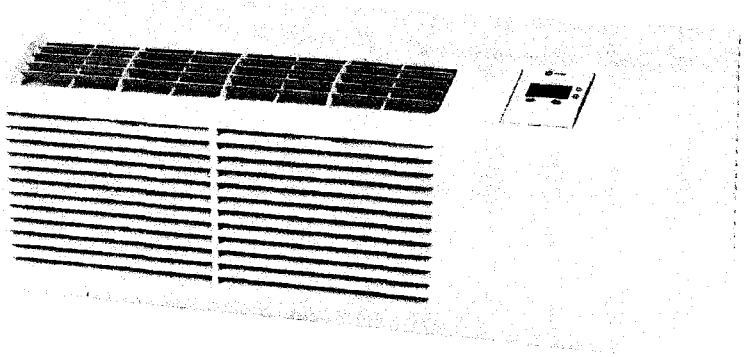
RESPECTFULLY SUBMITTED this 8th day of April 2011

By: _____

Lynn A. Wheeler

ORIGINAL and thirteen (13) copies of the foregoing and attachments filed this 8th day of April 2011, with: Docket Control, ARIZONA CORPORATION COMMISSION, 1200 West Washington Street, Phoenix, Arizona 85007.

Packaged Terminal Air Conditioner



PTEE070/PTHE070 (7,000 Btuh)
PTEE090/PTHE 090 (9,000 Btuh)
PTEE120/PTHE120 (12,000 Btuh)
PTEE150/PTHE150 (15,000 Btuh)

September 2008 **PTAC-SVX01D-EN**

ATCH #1

Table of Contents

Model Number Description

Each Packaged Terminal Air Conditioner/Heat Pump is assigned a multiple-character alphanumeric model number that precisely identifies each unit.

An explanation of the identification code that appears on the unit nameplate is shown below.

The model number helps owner/operator, installing contractors, and service technicians to define the operation, components and options for a specific unit.

Refer to the model number printed on the equipment nameplate when ordering replacement parts or requesting service.

P T E E0 90 1 U A B

1 2 3 4 5 6 7 8 9 10 11

Digits 1, 2—Packaged Terminal Air Conditioner

Digit 3—Product Type

E = Air Conditioner with auxiliary heat

H = Heat Pump

Digit 4—Development Sequence

E = Fifth Development Series

Digit 5, 6, 7—Unit Cooling Capacity

070 = 7,000 Btu

090 = 9,000 Btu

120 = 12,000 Btu

150 = 15,000 Btu

Digit 8—Main Power Supply

1 = 230-208V/60Hz/1phase

2 = 265V/60Hz/1phase

4 = 115V/60Hz/1phase (Hydronic Only)

Digit 9 —Electric Heat Capacity*

U = Universal Heater (Heater kW determined by power cord, see Accessories Section)

W = Hydronic (ships with no front cover & no electric heater)

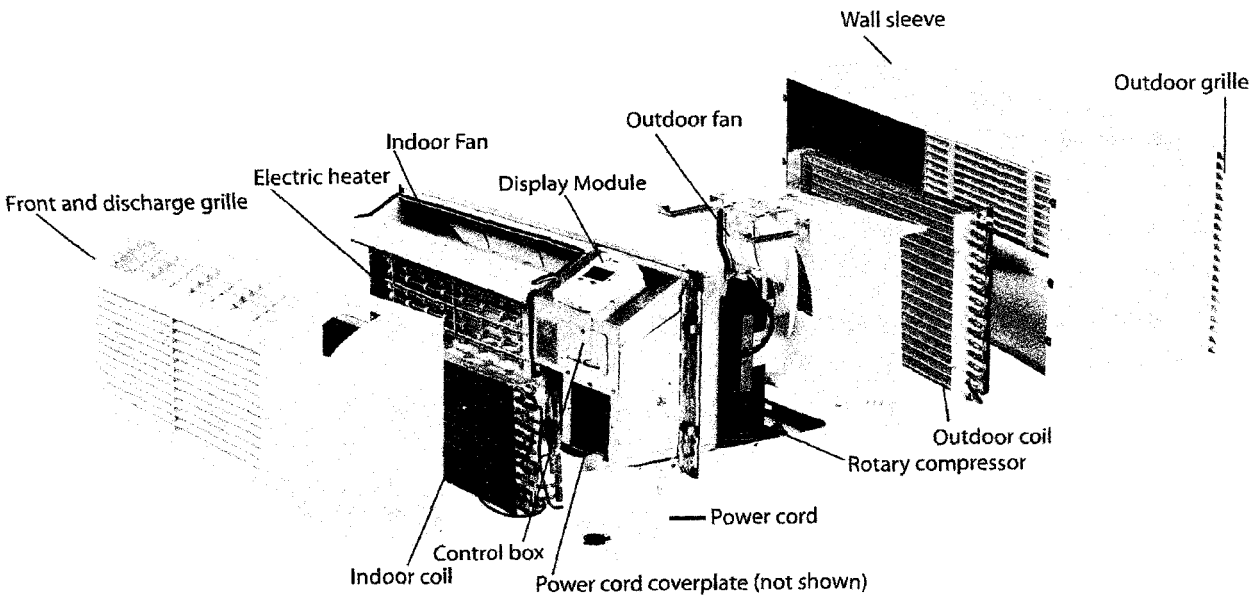
Digit 10 — Unit Features

A = Standard

C = Corrosion Resistant

Digit 11—Minor Design Sequence

*All heat pump units must have electric heat.



Pre-Installation

Pre-Installation Considerations

Before beginning installation, make the following considerations:

1. Verify the wall opening is in the correct location and the correct size.
2. Drill mounting holes on both sides of the wall sleeve, if equipment requires any of the following options: subbase, leveling legs, or hydronic heat kit.

   If dimension A in Figure 3 is at or near the minimum specified in Table 3, p. 9, accessory options should be mounted to the sleeve prior to installing the sleeve in the wall. Otherwise, there may not be enough access room for the tools used to mount the accessories to the wall sleeve.
3. If additional wall sleeve support is required, the leveling leg accessory kit or a subbase kit that includes leveling legs can be used to provide extra support.
4. If installing in a concrete or masonry wall, you must provide a lintel in the wall opening for support. Do not use the wall sleeve as a lintel.

   See Figure 2 for a typical lintel construction.

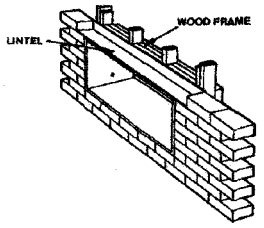


Figure 2. Typical installation framing with lintel

5. When installing in walls that are deeper than 13 1/2 inches, use an extended wall sleeve. A sleeve without the proper depth will require special care to prevent problems with rain water, condensate drainage, and intake/discharge air.

   Under these circumstances, careful job site analysis and cautions are required. Consult your local HVAC representative before attempting such installations.

Checklist

The following checklist provides an overview of the factory-recommended pre-installation considerations. Follow the procedures in this section to ensure the installation is complete and adequate for proper unit operation. Verify this checklist is complete before beginning unit installation.

- If unit arrives shipped on its side, do not accept.
- Verify the unit size and tagging with the unit nameplate to ensure the correct unit is received.
- Inspect the unit for possible shipping damage and make any necessary claims with the freight delivery company immediately.
- Verify the installation location is free of airflow obstructions, such as curtains, furniture, trees, or other objects that may block airflow to and from the unit.

⚠WARNING
Fire Hazard!

Do not use extension cords. Using extension cords could cause a fire which could result in death, serious injury or property-only damage.

- Make provisions for correct supply power and that the electrical receptacle is within 52 inches of the lower right corner of the equipment.
- Ensure the unit wall opening is level.
- Ensure adequate sealing and insulation is around the wall sleeve.

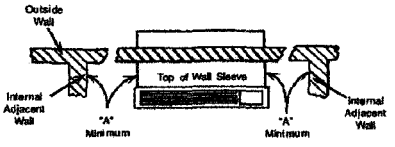


Figure 3. Minimum unit clearance

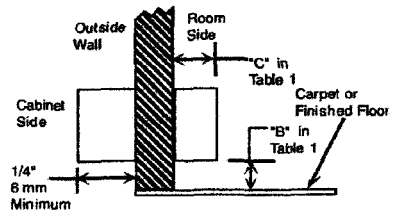


Table 2. Minimum interior and exterior projections

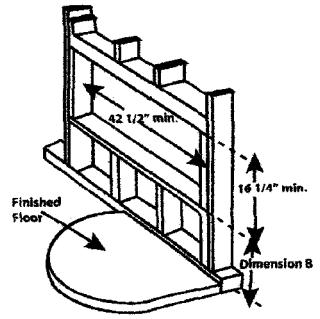


Figure 4. Minimum wall opening dimensions

Table 4. Electric heat capacity and electrical data, models PTEE and PTHE[i]

Voltage[ii]	Size (kW)	Btu/h	Heating watts	Heating amps	Minimum circuit ampacity[iii]	Circuit protection[iv]	Plug
230/208	2.0/1.6	6,800/ 5,600	2000/ 1600	8.9/7.9	11.4	15	6 - 15 P
230/208	3.0/2.5	10,200/ 8,400	3000/ 2500	13.4/11.8	17	20	6 - 20 P
230/208	5.0/4.1	17,100/ 14,000	5000/ 4100	22.2/19.7	28	30	6 - 30 P
265	2.0	6,800	2000	7.7	9.9	15	7 - 15 P
265	3.0	10,200	3000	11.6	14.7	20	7 - 20 P
265	5.0	17,100	5000	19.3	24.4	30	7 - 30 P

(i) All heat pumps have electric heat.
(ii) Minimum voltage on 230/208 volt models is 187 volts; maximum is 253 volts. Minimum voltage on 265 volt models is 239 volts; maximum is 292 volts.
(iii) Minimum branch circuit ampacity ratings conform to the National Electric Code. However, local codes should apply.
(iv) Overcurrent protection for all units without electric heaters is 15 amps. Overcurrent protection on 265 volt models must be cartridge-style time delay fuses.

Table 5. Power receptacle configurations

Unit Voltage Rating	230/ 208	230/ 208	230/ 208	265	265
Unit plug					
Plug amp rating	15	20	30	15/20	30
NEMA designation	6-15P	6-20P	6-30P	7-15P/7-20P	7-30P
Receptacle					
Receptacle amp rating	20	20	30	15/20	30
NEMA designation	6-20R	6-20R	6-30R	7-15R/7-20R	7-30R

Unit Dimensions

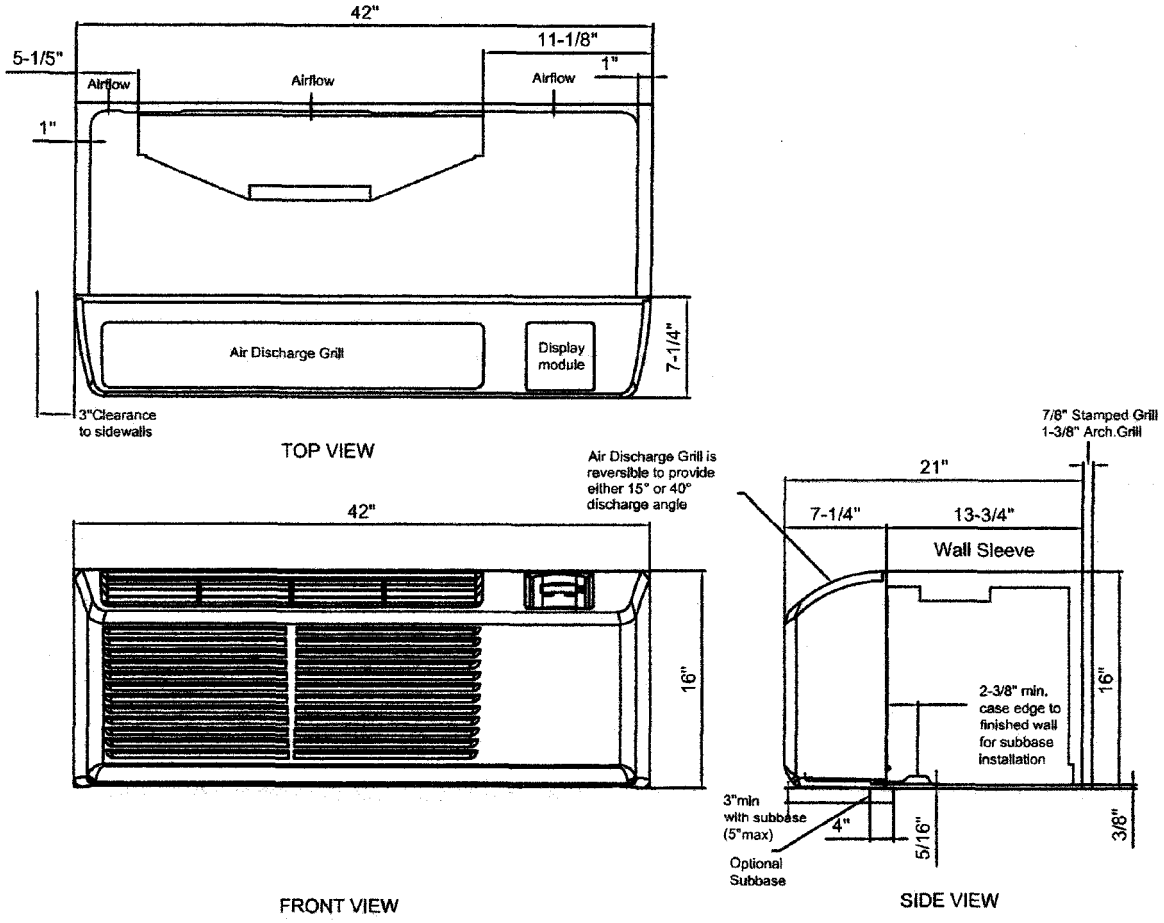


Figure 5. Unit with wall sleeve and subbase accessory

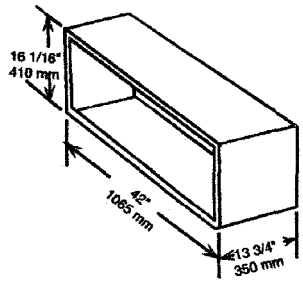


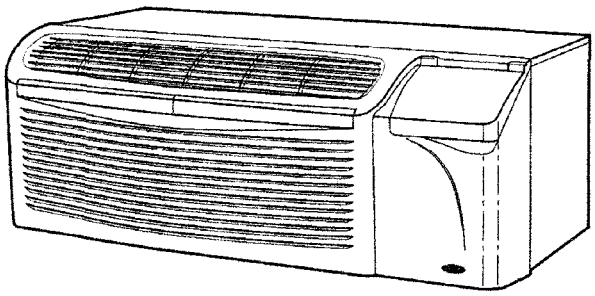
Figure 6. Wall Sleeve

52C and 52P
SERIES

OWNER'S MANUAL

PACKAGED TERMINAL AIR CONDITIONERS AND HEAT PUMPS

7,000-15,000 Btuh



CONTENTS

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For Service/Technical Assistance
1•800•830•8600 *(Mexico)*

Carrier®

Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without inc

Book	1	4	PC 132	Catalog No. 535-20066	Printed in U.S.A.	Form 52C,P-2SO	Pg 1	10-0
Tab	9a	11a						

ATCH #2

GENERAL

Thank you for choosing Carrier! You can feel confident in your selection because the same pride in craftsmanship and engineering knowledge that goes into Carrier equipment at the Astrodome in Texas, the Sistine Chapel in Rome, the US Capitol Hall of Congress, and thousands of other installations worldwide has gone into the construction of this unit.

The Carrier package terminal air conditioners and heat pumps provide a high standard of quality in performance, workmanship, durability and appearance as they heat and cool the occupied air space year round.

This manual provides information for ease of installation, operation and maintenance of the 52C and 52P units. The following units are covered in this manual (see Figure 1 for additional unit information):

52CE 60 Hz cooling with electric heat units
52CQ 60 Hz cooling, electric heat, and heat pump units
52PE 60 Hz cooling with electric heat units
52PQ 60 Hz cooling, electric heat, and heat pump units
52PC 60 Hz cooling only units

All models are designed for through-the-wall installation. Separate installation instructions are included with all accessory components. See Accessories section on page 15 for complete listing of accessories.

MODEL	52PQA312301AA		
SERIAL	3701X11520		
DATE OF MFG.	09/12/2001		
VOLT RANGE	187-253		
VOLTS	230/208		
PH 1		HZ 60	
MIN CKT AMPACITY	19.3		
R-22 OZ.	34		
DESIGN PSIG 350 HIGH SIDE, 150 LOW SIDE			
COOLING			
BTU/HR	12,100/12,000		
AMPS	4.8/5.3		
WATTS	1100/1100		
EER	11.0/10.9		
COMP	RLA	6.1	
	LRA	29	
FAN MOTOR	FLA	0.75	
	HP	1/8	
HEATING			
BTU/HR	10,800/10,700		
AMPS	15.6/14.5		
WATTS	3570/2997		
COP	3.2/3.2		
HEATER	AMPS	14.8/13.7	
	WATTS	3400/2850	
BTU/HR	WATER		
	STEAM		
USE 20 AMP TIME DELAY FUSE OR HACR TYPE CIRCUIT BREAKER		CANADIAN INSTALLATION MAX FUSE 20 AMP	MAX BREAKER 20 AMP
ADAM DATA FOR PERMANENTLY CONNECTED UNIT ONLY MOTOR - COMPRESSOR THERMALLY PROTECTED			

c UL us LISTED PACKAGE TERMINAL AIR CONDITIONER 5500

CARRIER Corporation

MADE IN MEXICO 99LRS20212 REV D

FOR SERVICE/TECHNICAL ASSISTANCE IN THE U.S. & CANADA TELEPHONE
1-800-894-6449

IN MEXICO TELEPHONE
01-800-830-8600

FIGURE 1 — SAMPLE DATA INFORMATION PLATE

UNIT INSPECTION

Examine unit for damage incurred during shipment. File a claim immediately with the transit company if damage is found.

The data information plate (Figure 1) lists the model number, voltage ranges, and other important electrical information about this product. Reading and understanding this material is important for proper use of this unit. To access the information plate, the front panel must be removed; see Figure 2.

FRONT PANEL

Remove front panel from unit by grasping the panel firmly at the center top and center bottom. Pull the panel upward at the bottom and forward at the top to release magnetic latches and partition hooks. See Figure 2.

NOTE: Front panel may be secured to chassis with 2 screws located behind indoor air inlet filters. In order to remove these screws, the filters must be removed first. Refer to page 11 in this manual for instructions on removing indoor air inlet filters.

IMPORTANT: The front panel has to be off the unit to complete future checks and installation procedures. **Do not reinstall front panel at this time.**

Using Figures 1 and 3 as reference, verify that the packaged terminal product ordered will operate properly in your facility. If you do not understand the information given or have questions about the product, please call your local dealer or distributor.

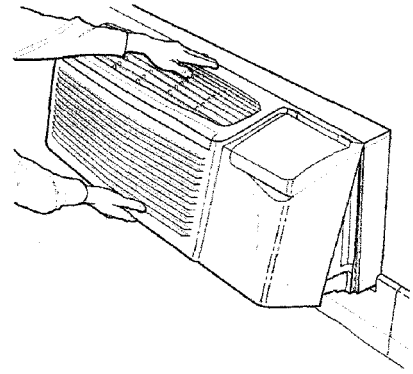


FIGURE 2 — REMOVING FRONT PANEL

Replacement Package Terminal Air Conditioner, CLASSIFIED BY UNDERWRITERS LABORATORIES INC., AS TO ELECTRIC SHOCK, FIRE AND CASUALTY HAZARDS ONLY. FOR FIELD INSTALLATION WITH EXISTING WALL SLEEVES, OUTDOOR LOUVERS, AND INDOOR PANELS AS SPECIFIED ON THE PRODUCT.

CLASSIFIED c UL us

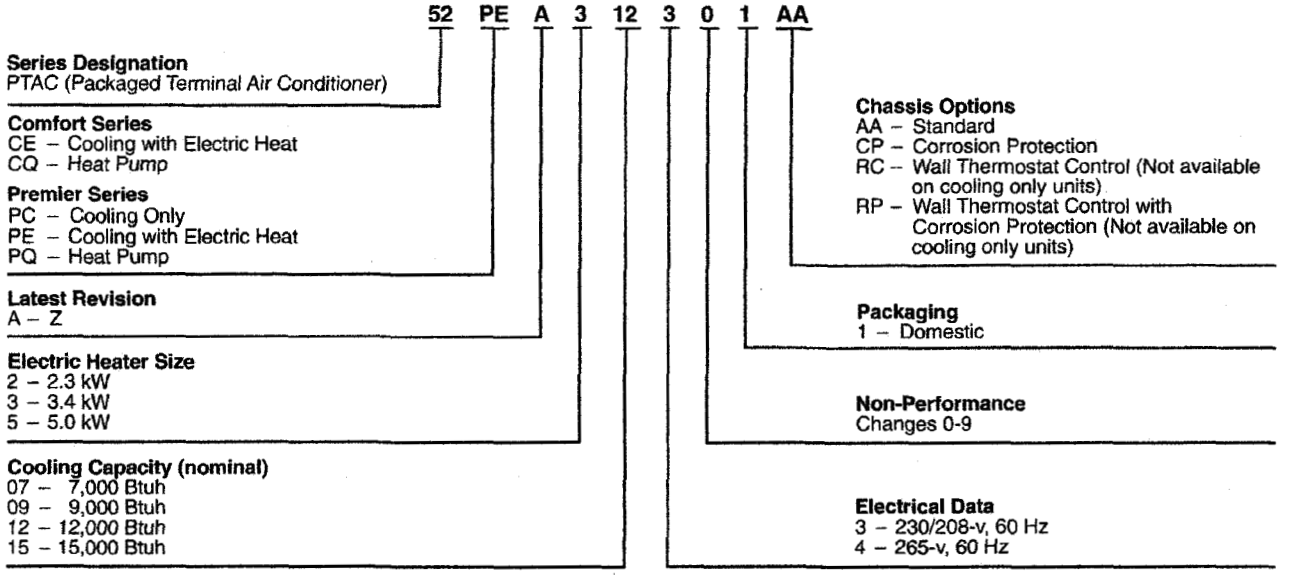


FIGURE 3 — MODEL NUMBER NOMENCLATURE

To install the front panel, follow the procedure outlined below:

Replace the unit front panel.

1. Hold the front panel firmly at the center top and center bottom at a 5 to 10 degree angle from vertical.
2. Place the top of the front panel onto the unit making sure the top engagement posts have engaged the slots on the unit. Front panel should be flat against the top of the unit.
3. Gently lower the front panel onto the chassis, ensuring that the power cord (or conduit) is routed through the front panel notch. Magnetic latches at bottom of front panel will secure the front panel to the unit.

To install locking feature on front panel, be sure front panel is already installed on unit and follow the steps below:

NOTE: Two field-supplied no. 8, 1/2-in. sheet metal screws are required to secure front panel to chassis.

1. Remove both indoor air inlet filters to expose front panel engagement holes. See Figure 4.
2. Secure front panel to chassis by attaching the field-supplied screws into engagement holes. *Do not over tighten.*
3. Replace both indoor air inlet filters.

NOTE: Front panel alignment may have to be adjusted slightly to line with chassis.

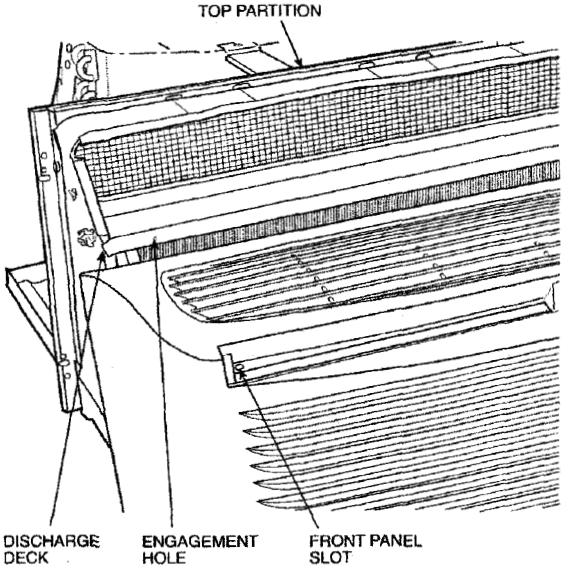


FIGURE 4 — FRONT PANEL INSTALLATION WITH LOCKING FEATURE

ELECTRICAL DATA

⚠ WARNING

ELECTRICAL SHOCK HAZARD

DO NOT alter cord or plug, and DO NOT use an extension cord. Personal injury or damage to the unit may result.

Be sure that your outlet matches the appropriate blade configuration of the supplied plug and that it is within reach of the service cord. A hardwire kit is available as an accessory to change cord-connected units to hardwired units. (See Accessories table on page 15.)

IMPORTANT: All standard cord-connected 265-v units will require a field-installed electrical subbase accessory.

ALL UNITS

■ **WIRE SIZE** — Use recommended wire size given in Table 1 and install a single branch circuit. All wiring must comply with local and national codes. **All units are designed to operate off single branch circuits only.**

NOTE: Use copper conductors only.

■ **GROUNDING** — For safety and protection, the unit is grounded through the service cord plug or through separate ground wire provided on hardwired units. Be sure that the branch circuit or general purpose outlet is grounded.

TABLE 1 — SUGGESTED BRANCH CIRCUIT WIRE SIZES*

NAMEPLATE AMPS	AWG WIRE SIZE†
7.0 to 12	14
12.1 to 16	12
16.1 to 24	10

LEGEND

AWG — American Wire Gage

*Single circuit from main box.

†Based on copper wire at 60 C temperature rating.

VOLTAGE SUPPLY

Check voltage supply at outlet. For satisfactory results, the voltage range must always be within the ranges found on the data information plate (shown in Figure 1).

■ **CORD-CONNECTED UNITS** — The 250-v field-supplied outlet must match the plug for the standard 208/230-v units and be within reach of the service cord. The standard cord-connected 265-v units require an accessory electrical subbase for operation. See Accessories table, page 15, for subbase selection. Refer to Table 2 for proper receptacle and fuse type.

■ **POWER CORD PROTECTION** — The power cord for the 230/208-v unit provides both personal shock protection and power cord fire prevention. Unit power automatically disconnects when unsafe conditions are detected. Power to the unit can be restored by pressing the RESET button on plug head.

Upon completion of unit installation for 230/208-v models, an operational check should be performed using the TEST/RESET buttons on the plug head. See Figure 5.

NOTE: The 265-v models do not incorporate this feature as they require use of the electrical subbase accessory.

TABLE 2 — RECEPTACLES AND FUSE TYPES — 250,265 VOLTS

RECEPTACLE	 15 Amps	 20 Amps	 30 Amps	 15 Amps	 20 Amps	 30 Amps
RATED VOLTS	250	250	250	265	265	265
TIME-DELAY TYPE FUSE (or HACR Circuit Breaker)	15	20*	30	15	20	30

LEGEND

HACR — Heating, Air Conditioning, Refrigeration

*May be used for 15-amp applications if fused for 15 amp.

INSTALLATION

CHASSIS INSTALLATION

Units are shipped without a sleeve. In applications where unit is a replacement, it is recommended that a Carrier sleeve and grille be used.

The 52C and 52P units can retrofit General Electric, Amana, Trane, and Friedrich sleeves/grilles (be sure outdoor grille is installed on the sleeve). See Table 3 for details. Carrier Corporation must approve any other retrofit application.

For competitive retrofit applications, be sure that the foam seals (factory-installed on the tube sheets) provide a good seal between the outdoor grille and outdoor coil tube sheets. These foam seals provide a barrier to separate outdoor coil leaving air from mixing with the outdoor incoming air (known as air recirculation).
See Figure 5.

⚠ CAUTION

For retrofit applications, foam seals on outdoor coil tube sheets must make a seal between the coil and the grille or loss of performance and premature damage to the major components can result.

TABLE 3 — RETROFIT WALL SLEEVES

MANUFACTURER	WALL SLEEVE PART NUMBER
General Electric	Metal Sleeve RAB71
	Plastic Sleeve RAB77
Amana	Metal Sleeve WS900B
Trane	Metal Sleeve SLV149
Friedrich	T-Series Metal 11 1/2-in. deep wall sleeve*
	Standard depth wall sleeve 16 x 42 x 13 3/4-in. PXWS

*FR-SLEEVE-EXT accessory is required for retrofit into Friedrich (T-Series) wall sleeves.

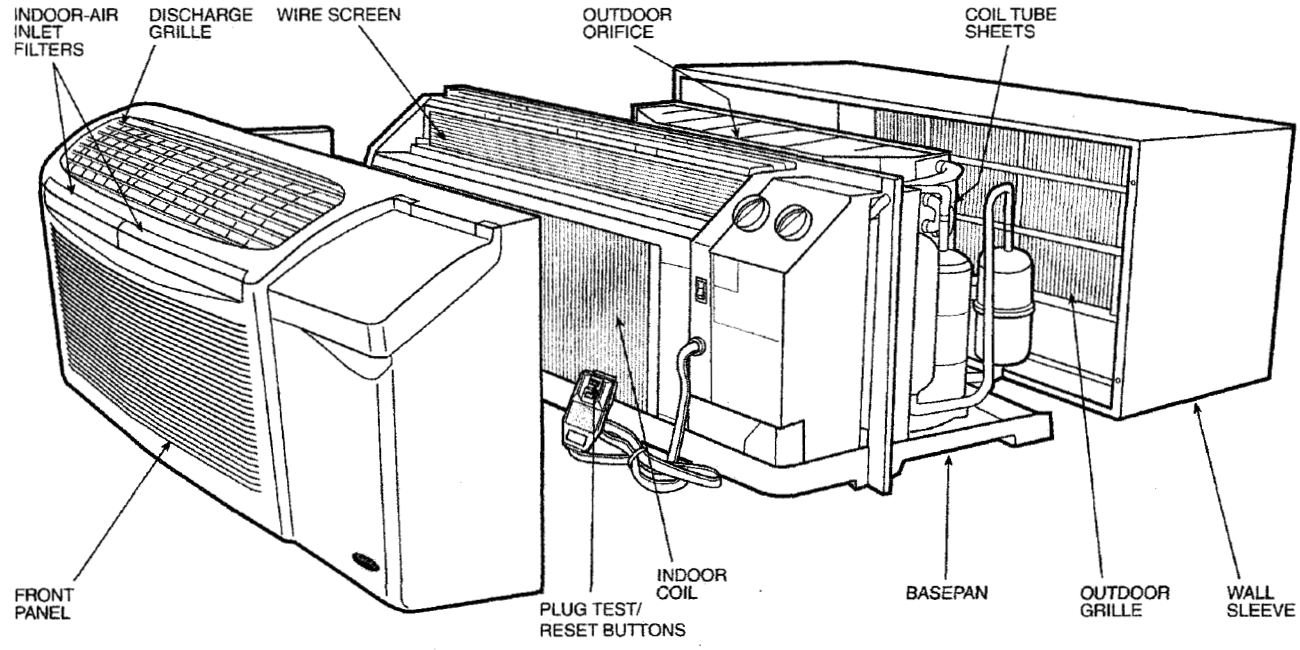
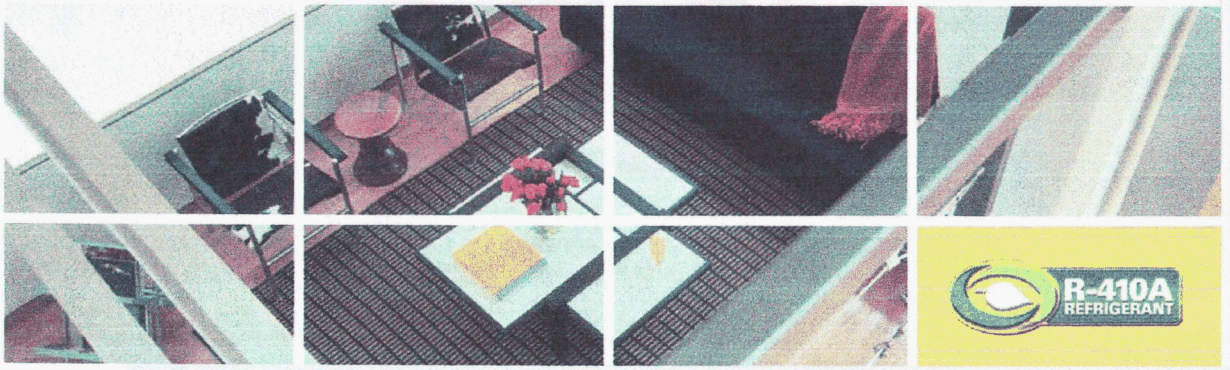


FIGURE 5 — UNIT COMPONENTS

AMANA® BRAND HEAT/COOL ROOM AIR CONDITIONERS

Electric Heat or Heat Pump Models

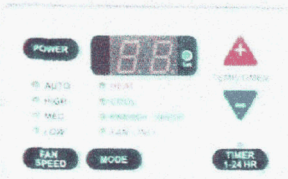


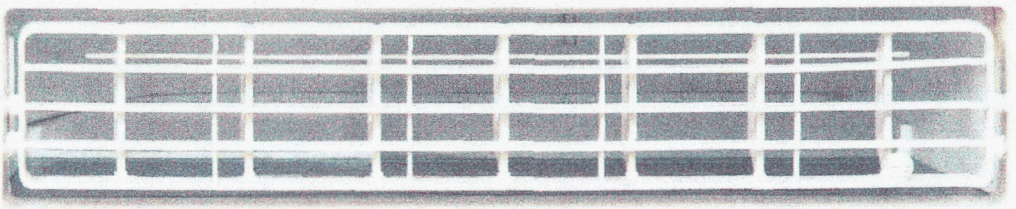
Specifications for:

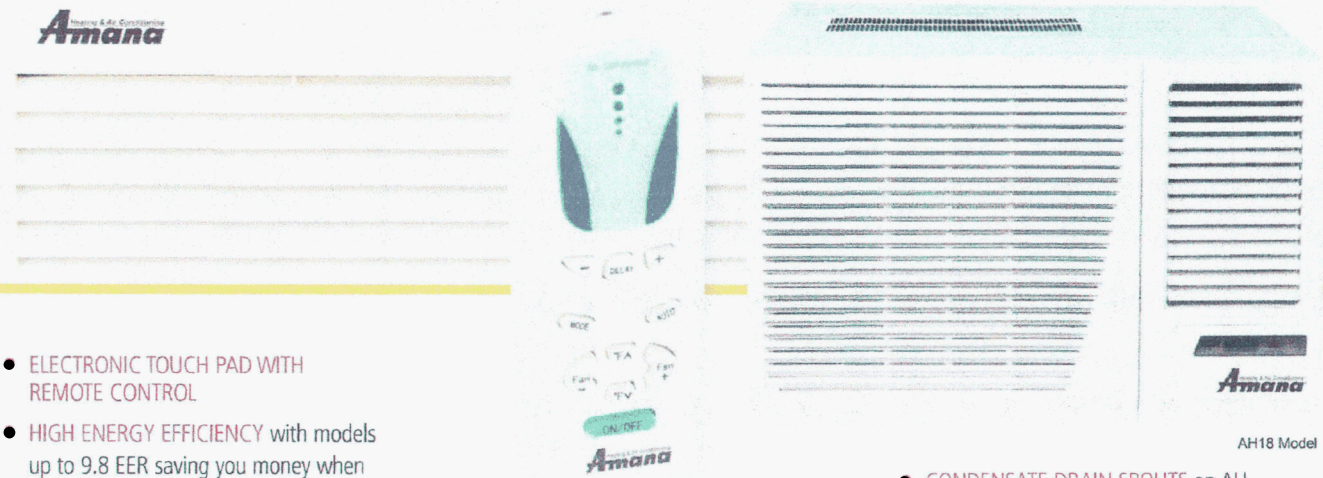
Electric Heat Models:
AE093E35AXAA
AE123E35AXAA
AE183E35AXAA

Heat Pump Models:
AH093E35AXAA
AH123E35AXAA
AH183E35AXAA

Complete room comfort with easy-to-use controls







AH18 Model

- ELECTRONIC TOUCH PAD WITH REMOTE CONTROL
- HIGH ENERGY EFFICIENCY with models up to 9.8 EER saving you money when compared to lower EER models.
- SOLID BOTTOMS ON OUTERCASES for full seal – through-the-wall installation.
- 100% FULL FACTORY RUN TEST on all units for high reliability and dependability. Units start the first time - every time!
- BALL-BEARING FAN MOTORS that are reliable, start quickly and run quietly.
- MULTI-DIRECTIONAL AIRFLOW to allow for cooling or heating to any part of the room. Some models contain automatic 2-way air swing feature.
- EASY ACCESS SLIDE-OUT FILTER (left or right side pullout) – has a permanent polypropylene filter mesh that is easy to remove and clean.
- HYDROPHILIC COATING ON EVAPORATOR AND CONDENSER COILS on ALL models which allows better moisture removal, increased air flow, increased heat exchange, higher efficiencies and longer compressor life.
- CONDENSATE DRAIN SPOUTS on ALL models to direct condensate drainage.
- LCDI POWER CORDS improve safety and protect against crimping or cuts on power cords.

Before purchasing this appliance, read important information about its estimated annual energy consumption, yearly operational cost, or energy efficiency rating that is available from your retailer.

Amana® is a tradema
companies and is used under license to Good

ATCH # 3

R-410A REFRIGERANT

Amana® brand Models	Electric Heat Models			Heat Pump Models		
	AE093E35AXAA	AE123E35AXAA	AE183E35AXAA	AH093E35AXAA	AH123E35AXAA	AH183E35AXAA
General Features:						
Voltage	230/208	230/208	230/208	230/208	230/208	230/208
Discharge Air	Top	Top	Side	Top	Top	Side
Auto Air Swing	No	No	Yes	No	No	Yes
Slide-out Filter	Side Pull-out	Side Pull-out	Front Pull-out	Side Pull-out	Side Pull-out	Front Pull-out
Approx. Chassis Wgt.	88 lbs	91 lbs	132 lbs	91 lbs	96 lbs	143 lbs
Approx. Shipping Wgt.	108 lbs	111 lbs	151 lbs	111 lbs	116 lbs	162 lbs
Cooling:						
Capacity / BTUH	9,500 / 9,200	11,600 / 11,200	17,800 / 17,400	9,500 / 9,200	11,600 / 11,200	17,300 / 17,000
Amps	4.3 / 4.5	5.2 / 5.7	8.2 / 8.8	4.6 / 4.8	5.5 / 5.9	8.5 / 9.0
Watts	950 / 920	1,160 / 1,200	1,835 / 1,795	950 / 920	1,220 / 1,180	1,920 / 1,890
CFM	280	280	450	280	280	590
E.E.R.	10.0 / 10.0	10.0 / 10.0	9.7 / 9.7	10.0 / 10.0	9.5 / 9.5	9.0 / 9.0
Dehumidification - pts/hr	2.3	2.6	4.2	2.2	2.5	4.1
Electric Heat:						
Capacity / BTUH	10,700 / 8,500	10,700 / 8,500	11,000 / 9,000	10,700 / 8,500	10,700 / 8,500	11,000 / 9,000
Amps	16.0 / 14.6	16.0 / 14.6	16.0 / 15.6	16.0 / 14.6	16.0 / 14.6	16.0 / 15.6
Watts	3,575 / 2,765	3,575 / 2,765	3,555 / 2,900	3,575 / 2,765	3,575 / 2,765	3,555 / 2,900
Heat Pump: (Reverse cycle)						
Capacity / BTUH	n/a	n/a	n/a	8,400 / 8,100	10,300 / 10,000	16,000 / 15,700
Amps	n/a	n/a	n/a	4.2 / 4.5	5.1 / 5.6	8.3 / 8.8
Watts	n/a	n/a	n/a	850 / 820	1,160 / 1,130	1,800 / 1,770
C.O.P	n/a	n/a	n/a	2.9 / 2.9	2.6 / 2.6	2.6 / 2.6
Adjustable Change-Over Thermostat	n/a	n/a	n/a	Yes	Yes	Yes
Thermostatic Drain Valve	n/a	n/a	n/a	Yes	Yes	Yes
Dimensions:						
Outercase-sleeve						
Height	15 3/8"	15 3/8"	16 7/8"	15 3/8"	15 3/8"	16 7/8"
Width	22 5/8"	22 5/8"	26"	22 5/8"	22 5/8"	26"
Depth	24"	24"	27 3/4"	24"	24"	30 1/2"
Depth with Front	26 3/4"	26 3/4"	29 3/4"	26 3/4"	26 3/4"	32 1/2"

Features: (all models)

Electrical	6.0' LDCI power cord; Perpendicular plug; 20-amp circuit breaker
Agency Approval	U.L (Underwriters Laboratory) listed; USA and Canada
Chassis type	Slide-out for easy installation and service accessibility
Fan Speeds	2 speeds, High and Low
Fan ONLY	Yes – high speed
Condensate drain	Yes – condensate drain spout on the wall sleeve
Window kit	Yes – optional window mount kits are available

1-Year Entire Unit Limited Warranty*
5-Year Sealed System Limited Warranty*

1-Year Entire Unit and 5-Year Sealed System Components. Goodman Company L.P. will repair or replace any factory defective part or sealed system leak caused by a defective part. See product warranty for complete details.

*Complete warranty details available from your local dealer or at www.amana-ptac.com

Plug Type

Perpendicular
20 Amps
250 Volts

Heating & Air Conditioning Amana®

CB-ARACA

RMS Voltage Minute Histogram Report

START: Jun 13, 2006 17:08:19
STOP: Jun 16, 2006 11:47:55
Duration: 2 Days 18:39:36
Firmware Version: 2.41, Unit Type: iV600
Software Version: 1.84, Serial No.: 16093
FILE NAME: W:\RVM Data\PMI\Gila Bend\America's Inn GB 22.isf

VOLTAGE SCALE FACTOR: x1.00
CURRENT SCALE FACTOR: x1.00
CURRENT RANGE: 1000 Amps
STRIPCHART INTERVAL: 1 Minute

Voltage Volts	Channel	Minutes Channel	Channel 3
0	0	0	0
1	0	0	0
2	0	0	0
200	0	0	0
201	0	0	0
202	0	3	0
203	0	107	0
204	0	360	0
205	0	808	0
206	164	543	0
207	662	402	0
208	868	417	0
209	659	586	9
210	485	514	88
211	577	222	400
212	427	37	839
213	181	0	771
214	63	0	484
215	23	0	664
216	0	0	432
217	0	0	220
218	0	0	41
219	0	0	45
220	0	0	6
221	0	0	0
222	0	0	0
223			

3999 3999 4000 Total minutes
716 2223 0 Minutes less than 208 Volts
17.9% 55.6% 0% Percent of time less than 208 Volts

ATCH # 4

Header Report

RMS Voltage Minute Histogram Report

START: Jun 21, 2006 15:20:43
STOP: Jun 27, 2006 14:25:44
Duration: 6 Days 23:05:01
Firmware Version: 2.41, Unit Type: iV600
Software Version: 1.84, Serial No.: 16097
FILE NAME: W:\RVM Data\PMI\Gila Bend\America's Inn Scott's at SES, 6-28.isf
VOLTAGE SCALE FACTOR: x1.00
CURRENT SCALE FACTOR: x1.00
CURRENT RANGE: 1000 Amps
STRIPCHART INTERVAL: 1 Minute

Voltage Volts	Minutes Channel	Channel	Channel 3
0	0	0	0
1	0	0	0
2	0	0	0
3	0	0	0
197	0	0	0
198	0	0	0
199	0	0	0
200	0	0	9
201	0	0	74
202	0	0	218
203	0	3	669
204	0	47	892
205	0	232	1834
206	0	621	1474
207	0	1207	1115
208	5	1806	992
209	98	1555	875
210	436	1108	525
211	1191	1136	84
212	1574	649	3
213	1796	188	0
214	1085	33	0
215	1108	0	0
216	843	0	0
217	364	0	0
218	66	0	0
219	28	0	0
220	0	0	0
	8585	8584	8584

Total minutes

0	2010	6105
0%	24.6	71.1%

Minutes less than 208 Voltz

Percent of time less than 208 Voltz

ATCH #5

Michael Tobin, P. E.

5030 East Laurel Lane
Scottsdale, Arizona 85254

April 4, 2011

To whom it may concern:

I am a practicing mechanical engineer registered to practice in Arizona, Colorado, California and Texas. I graduated from Kansas State University with a B.S. degree in mechanical engineering in December of 1973. I have been registered since February 1978 and I have been in responsible engineering charge of projects with HVAC applications since that time.

I have been asked to consider the installation of through the wall (PTAC) units that have been installed at the America's Choice Inn and Suites at Gila Bend, Arizona and offer my professional opinion of the fitness of purpose and the acceptability of the installation.

I have seen evidence that the PTAC units installed for the building were of two manufacturers, namely Comfort-Aire and Amana. These units were specified with electrical service of 208/230 volts, single phase power connections. This is a standard throughout the industry. The technical support representative of Comfort-Aire has advised me that these units can be expected to give an industry standard acceptable service life if the electrical supply does not fall below 197.6 volts. This information is consistent with data I have received from many other manufacturers.

A representative of Arizona Public Service (APS) has opined that these units should have been specified with 200 volt operating systems to give a better service life. **Equipment designed to operate with this voltage is not commercially available from any manufacturer known to me.** Modifying shelf units by removing 208/230 volt equipment and installing 200 volt components (if such equipment could ever be found) would void the certification of the equipment (ETL or UL). Having units submitted to Underwriter's Laboratories for certification

ATCH #6

with bastard equipment would be cost prohibitive for the project if such equipment could ever be found. Installation of equipment that is without valid certification is illegal.

Arizona Public Service has provided evidence from a recording volt meter in 2006, that the service voltage feeder #22 that serves the motel had dropped to as low as 200 volts. This was after a number of changes including adding capacitors and changing tap settings. APS has provided no record as evidence of what the service voltage was prior to making any adjustments. In the time between 1995 and 2000, thirty five customers were added to this feeder and I would suggest the additional load caused the voltage to sag and this produced and under voltage situation that has resulted in the premature failure of the motel's PTAC units. No evidence can be provided that demonstrates the voltage was sufficient prior to altering the distribution system.

The Arizona Corporation Commission has established the requirement of plus or minus 5 percent for the operating voltage the utility provides. This is established in ANSI C84.1-2006. As long as APS provides electrical power in compliance with this requirement, the voltage will remain above the 197.6 volts the equipment manufacturer requires. The representative from APS has reported that the service voltage at the site has been known to drop below this level routinely and has been there for an extended time. This practice has been in violation of the standard set by the Corporation Commission and should be recognized as deleterious to the equipment installed.

The information recorded herein is true and accurate as it is know to me.

Michael Tobin

Registered Professional Engineer Mechanical
CERTIFICATE NO.
30836
MICHAEL
VANCE
TOBIN
Date Signed
ARIZONA, U.S.A.

EXPIRES
12/31/2011